11. *crossophylla* Tuck.
12. *molybdæa*, var. *eronia* Tuck. cum fructu.
13. *Pannaria nigra* (Huds.) Nyl.
14. *Synalissa Schæreri* (Mass).
15. *Collema microphyllum* Ach.
16. *flaccidum* Ach.
17. *pulposum* (Bernh.) Ach
18. *pustulatum* Ach.
19. *Leptogium subtile* Nyl.
20. *pulchellum* (Ach.) Nyl.
21. *myochroum*, var., *saturninum* (Dicks.) Tuck.
22. *Placodium cerinum* (Hedw.) Næg.
23. *Placodium aurantiacum* (Lightf.) Næg.
24. *ferrugineum* (Huds.) Hepp.
25. *Lecanora muralis* (Schreb.) Schær.
26. *tartarea* (L.) Ach.
27. *subfusca* (L.) Ach.
28. *cinerea* (L.) Ach.
29. *cervina f clavis* DC.
30. *Rinodina sophodes*, var. *confragosa*, Nyl.
31. *Pertusaria pertusa* (L.) Ach.
32. *globularis** Ach.
33. *Cladonia alcicornis* Fr.
34. *furcata* (Huds.) Fr.
35. *squamosa*, var. *cæspiticia* Nyl.
36. *rangiferina* (L.) Hoffm.
37. *uncialis* (L.) Fr.
38. *Biatora rufo-nigra* Tuck.
39. *parvifolia* Pers.
40. *exigua* (Chaub.) Fr.
41. *rubella* (Ehrh.) Rabenh.
42. *chlorosticta* Tuck.
43. *Lecidea enteroleuca* Ach.
44. *tessellina* Tuck.
45. *Buellia lactea* Mass.
46. *atro-alba*, var. *chlorospora* Nyl.
47. *Opegrapha vulgata* (Ach.) Nyl.
48. *Graphis scripta* (L.) Ach.
49. *Arthonia punctiformis* Ach.
50. *tædiosa* Nyl.
51. *Mycoporum pycnocarpum* Nyl.
52. *Calicium populneum*† De Brogn.
53. *Calicium tubiforme* Mass.—Parasitic on *Pertusaria pertusa* on rocks.
54. *Endocarpa miniatum* (L.) Schær., and var. *Manitense* Tuck.
55. *Endocarpon hepaticum* Ach.
56. *Sagedia Laureri* (Flot.) Tuck.—On rocks.
57. *Staurothele diffractella* (Nyl.) Tuck.
58. *Sagedia Cestrensis* Tuck
59. *Verrucaria fuscella* Fr.
60. *rupestris* Schrad.
61. *Pyrenula glabrata* (Ach.) Mass.

W.

*Perhaps this species is only a form of *P. leioplaca*.

†This species has not before been found in this country, except, perhaps, in a very scanty specimen from New Bedford. The specimen is scanty, and, perhaps, not altogether certain.

Mortality among Hickories.—Being in Lisle, Illinois, in September, I was told that the hickories, the "bitternut" and the "shagbark," had been gradually dying for several years, and I saw many dead trees to confirm the statement. Has this mortality been observed to prevail extensively at the West, and has any cause been assigned for it? W.

A few responses to Mr. Coleman's query in the Jan. No. of Vol. III., page 7.—*Changes in Vegetation.*—It would be a good service to vegetable biology if any who have "authentic" facts in regard to the long continued vitality of seeds, would kindly respond to Mr. Coleman's request, and communicate. I have watched for many years, and have seen no account that went beyond a mere guess. The "mummy wheat" is but an Egyptian trick. Mr. Ernst's Caraccas experience, which was recently given in European periodicals, can be accounted for in other ways than on the "large vitality" guess which he offers. The strongest case is thought to be the *Glaucium* at the Laurentian mines, where a "new species" turned up from under the buried scoriæ of a thousand years. But we must remember that in countries where they will make you a

hundred species out of our common *Draba verna*, it is hardly necessary to go back so many ages for a new species of *Glaucium*. Many of the countries of Europe have not been as well explored as our own, though so much older, and it is quite as likely that that "species" would be found somewhere within a hundred miles or so, as that it came from seed that had been buried in the earth for hundreds of years.

Near me, a few years ago, a street was being graded, and pure brick clay from six feet below the surface was spread over contiguous ground. Quite a quantity of *Ambrosia artemisiæfolia* appeared on it, and I was asked: "Where did the seed come from if it had not been in the ground for hundreds of years?" The asking of that question does not prove the antiquity of the seed. I thought I would get better proof. I took earth from six inches, one foot, two feet, and four feet beneath the surface, and put each lot in separate glass jars of water. After a long and careful stirring, the mud was allowed to settle. The vegetable remains formed the upper course, the clay being the heaviest sinking to the bottom. The results were interesting in many respects, but I may say briefly that there was no sign of any seed whatever after getting one foot below the surface, and at six inches most of the remains were but the mere shells of dead seeds.

I am satisfied that if those who think seeds are "in the ground" waiting a chance to grow, especially such large seeds as oaks, pines, hazel nuts, and so forth, will try this easy and simple plan, they will not take "where do the trees come from?" to mean that the seeds have been for a long time in the ground. In former papers, in other places, I have shown where the plants often do come from; but it is not necessary to repeat those observations now.—Thomas Meehan.

"*Whence the Seeds?*"—An important incident is narrated in the Plattsburg Republican of Sept. 1st, 1877, by Mr. O. S. Phelps of Essex county, N. Y., which has such a direct bearing upon the answer to the question proposed by Mr. Coleman in his communication to the January number of the Gazette, that it seems worthy of repetition. Though Mr. Phelps makes no claim to botanical knowledge he is a close and intelligent observer of nature. The incident came under his own observation and is substantially thus:

Many years ago the timber was cleared from a piece of land and a log fence was built along one side of this clearing. In a little time raspberry plants (*Rubus strigosus*) made their appearance along this fence and gradually increased in numbers till a continuous hedge of them skirted its entire length. But the clearing was neglected and in a few years a second crop of trees and shrubs had sprung up, which soon overtopped the raspberries and "*run them out*," in other words, destroyed them by depriving them of the necessary sunlight. Twenty-five years passed away and this second crop of timber was cut, the land was again cleared, burned over and planted. Behold what followed! At midsummer a dense crop of young raspberry shoots had sprung up all along the line of the old log fence, marking its former position and showing every crook and turn in its direction. Whence the seeds? Evidently they had been dropped there by the old hedge-row of a quarter of a century before, and had lain there buried under fallen leaves and decaying vegetable matter, waiting for the quickening influences of the sun's rays to call their latent powers into activity and cause them to germinate and grow.—Chas. H. Peck.

"*Where do the seeds come from?*"—The probability is, that in most cases, the wind and animals are the transporters of the seed. The blue-jay is particularly active in storing seeds in and about trees and rocks. Wood-chucks and squirrels are also industrious workers in this line. The agency of insects should not be overlooked; ants are generous providers and keep their graneries well filled. Of course all this transportation is not accomplished without much waste by the way-side, and even the store

houses themselves may overflow, or be broken into and their contents scattered. That one kind of plant should supersede another, or that one kind should grow so vigorously as to choke out all others, is merely an illustration of the "survival of the fittest." —Mrs. J. M. Milligan.

Some large Walnuts.—In the Gazette I see notes occasionally of unusually large growths. The following may be of interest in this connection. A small *Juglans nigra*, about six inches in diameter and about twenty feet high, bore three pecks of fruit, which average near $11\frac{1}{2}$ inches in circumference, and $10\frac{3}{4}$ ounces in weight. The tree grows in a field, and has no unusual appearance, except the fruit, which looks more like that of the Osage Orange.—Dr. J. Schneck, *Mt. Carmel, Ill.*

The Range of the common Huckelberry in Missouri.—The common huckelberry is not found north of a certain N. E. and S. W. line. Its northern extension is a follows: I have found it on Cuivre bluffs near Troy, Lincoln Co.; also in the northwest part of St. Charles county; on Missouri bluffs as far west as Jefferson City; near Versailles in Morgan county; at Clinton, in Henry county; and in Jasper county; thence it passes southwestward. It is invariably found on either flinty or sandy soil, or where there is but little soil. It abounds chiefly in the pine region of South-eastern Missouri. —Prof. G. C. Broadhead.

Some new stations.—The neighboring county of Clark bids fair to equal Jefferson in the number of its good plants. When it is thoroughly worked up we hope to be able to report many rare things, but those enumerated below are worthy of special mention. While doing some field work last May with one of the College classes, Mr. Chas. R. Barnes called my attention to an odd little Crucifer clinging to the edges of some shaly limestone bluffs. The plant seemed to have suppressed every other part for the benefit of its enormous pods, which were more than half as long as all the rest, and a much more noticeable object than the inconspicuous lyrate root leaves. The little stranger proved to be *Leavenworthia Michauxii*, Torr., growing there in sufficient abundance to satisfy the rapacity of even a botanist possessed of the mania for exchanging. Within a few miles of the above, later in the season, Mr. John F. Baird, collected some fine specimens of *Sullivantia Ohionis*, T. & G., and reported that it was growing in greater abundance even than at Clifty Falls, the habitat of specimens that are to be found in very many of the herbaria of the land. Of course it was growing upon damp limestone cliffs, sending its roots down into the soft, spongy moss. Mr. Baird also collected specimens of *Cleome pungens*, Willd., that to all appearances were perfectly naturalized.—J. M. C.

Botanical Excursions, No. 1, by J. G. Lemmon.—The Great Basin.—The great basin of America is the bed of the evaporated Mediterranean sea of the western continent. Situated on the same parallels as its Eastern prototype, bordered like that on all sides with high ranges of mountains, it differs from it in two particulars, which render the one a very salt sea and the other a very salty desert.

The Mediterranean sea fills a deep chasm in the earth's crust 2,000 to 6,000 feet deep; lying between 30 deg. and 46 deg. north lat., and almost constantly swept by the dry winds of the great Sahara, its waters are evaporated at an immense rate, which would, ages ago, have emptied its basin but for the other important fact, the Strait of Gibraltar, through which a strong current ever comes from the ocean; and this, in addition to the mighty rivers which empty into the sea, and all to restore the equilibrium disturbed by evaporation. To this evaporation—this lifting of a sea into the air—is Europe indebted, mainly, for its exceeding fertility. The dry South wind is a sponge which takes up the waters of the Mediterranean and, condensed by the cold summits of the mountains of Europe, showers its waters over the plains. To this fact also is due the intense saltiness of the Mediterranean, for salt is the residuum of evaporation.